Chemical Analysis Report

SW-DIST-2019-06-11-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Horsehole - WBID 3703**
Request ID: **RQ-2019-06-03-19**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
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13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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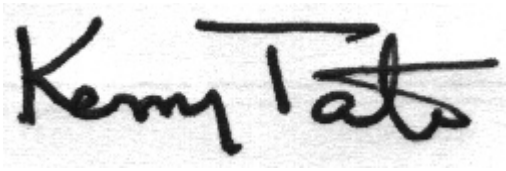
Date Certified: 01-JUL-2019 13:14



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: HORSEHOLE CREEK @ 19 **Collection Date/Time: 06/10/2019 13:40**

Field ID: G1SW0103 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2094248	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P365442	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P365708	
		Sulfate	4.9		mg SO4/L	P365712	
	SM 2120 B	Color (true)	130		PCU	P365448	
	SM 2320 B-97	Total Alkalinity	89		mg CaCO3/L	P365797	
	SM 2540 C-97	TDS	162		mg/L	P365851	
	SM 2540 D-97	TSS	4	I	mg/L	P365839	
	SM 4500 F-C-97	Fluoride	0.046	I	mg F/L	P365800	
2094249	EPA 350.1 Rev. 2.0	Ammonia-N	0.026		mg N/L	P365761	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.72		mg N/L	P365980	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P365655	
	EPA 365.1 Rev. 2.0	Total-P	0.065		mg P/L	P365681	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P365740	
2094250	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.035		mg P/L	P365433	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365442

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365708

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365712

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365761

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365980

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365655

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365681

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365433

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P365448

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P365797

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P365851

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P365839

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P365800

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P365740

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365708

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365712

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365761

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365980

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	96.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365433

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.5		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P365448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P365797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P365800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P365740

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094223	Chloride	100		P	90 - 110
2094269	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094223	Sulfate	102		P	90 - 110
2094269	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365761

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094229	Ammonia-N	99.2	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094207	NO2NO3-N	95.8	95.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094227	Total-P	103	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365433

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094232	O-Phosphate-P	97.1	98.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P365800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094395	Fluoride	102	103	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P365740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2094228	Organic Carbon	101	102	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P365442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094263	Turbidity	2.91	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094223	Chloride	0.134	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P365712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094223	Sulfate	0.316	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P365761

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094229	Ammonia-N	1.00	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P365980

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094208	Kjeldahl Nitrogen	0.924	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P365655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094207	NO2NO3-N	0.509	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P365681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094227	Total-P	2.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P365433

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094232	O-Phosphate-P	1.23	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P365448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094234	Color (true)	1.44	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P365797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094395	Total Alkalinity	0.123	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P365851

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094225	TDS	2.76	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P365800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094395	Fluoride	0.479	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P365740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2094228	Organic Carbon	0.291	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A92017
Included Lab Sample IDs: 2094250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.8	99.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A92019
Included Lab Sample IDs: 2094248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	98.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A92021
Included Lab Sample IDs: 2094248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A92026
Included Lab Sample IDs: 2094248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	102	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A92109
Included Lab Sample IDs: 2094249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	96.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A92136
Included Lab Sample IDs: 2094249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A92142
Included Lab Sample IDs: 2094249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A92150
Included Lab Sample IDs: 2094249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	103	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A92164
Included Lab Sample IDs: 2094248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	106	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A92164
Included Lab Sample IDs: 2094248

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A92328
Included Lab Sample IDs: 2094249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	107	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					2.91	
EPA 300.0 Rev. 2.1	Chloride	101	100	101		0.134	
	Sulfate	102	102	102		0.316	
EPA 350.1 Rev. 2.0	Ammonia-N	99.5	99.2	101			1.00
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104					0.924
EPA 353.2 Rev. 2.0	NO2NO3-N	96.5	95.8	95.3			0.509
EPA 365.1 Rev. 2.0	Total-P	103	103	101			2.25
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	98.3	97.1			1.23
SM 2120 B	Color (true)	99.3				1.44	
SM 2320 B-97	Total Alkalinity	105				0.123	
SM 2540 C-97	TDS					2.76	
SM 4500 F-C-97	Fluoride	97.5	102	103			0.479
SM 5310 B-00	Organic Carbon	100	101	102			0.291

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2094248
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2094248
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2094248
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2094249
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2094249
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2094249
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2094249
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2094250
SM 2120 B / E31780	True Color measured at 450 nm	2094248
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2094248
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2094248
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2094248
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2094248
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2094249

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	06/11/2019			06/11/2019 16:05	Julia Storbeck	2094248
EPA 300.0 Rev. 2.1	06/11/2019			06/14/2019 21:33	Lipi Saha	2094248
EPA 350.1 Rev. 2.0	06/11/2019			06/14/2019 15:13	Ping Hua	2094249
EPA 351.2 Rev. 2.0	06/11/2019	06/19/2019 12:00	Adrian Shelby	06/24/2019 15:18	Joseph Suarez	2094249
EPA 353.2 Rev. 2.0	06/11/2019			06/14/2019 11:19	Beverly Y. Sanders	2094249
EPA 365.1 Rev. 2.0	06/11/2019	06/14/2019 12:55	Sima Feizi	06/17/2019 12:38	Julia Storbeck	2094249
EPA 365.1 Rev. 2.0 dissolved	06/11/2019			06/11/2019 15:00	Jhamieka S. Greenwood	2094250
SM 2120 B	06/11/2019			06/11/2019 16:06	Madeline Funaro	2094248
SM 2320 B-97	06/11/2019			06/18/2019 05:14	Dale L. Simmons	2094248
SM 2540 C-97	06/11/2019			06/13/2019 15:55	Yijie Li	2094248
SM 2540 D-97	06/11/2019			06/13/2019 15:55	Yijie Li	2094248
SM 4500 F-C-97	06/11/2019			06/18/2019 05:14	Dale L. Simmons	2094248
SM 5310 B-00	06/11/2019			06/13/2019 21:32	Madeline Funaro	2094249